

Automatic Power Factor Controller Relay

CE 7UG0
IEC 60947-5-1



Please read and understand these instructions before installing, operating, or maintaining the equipment.

	DANGER Hazardous voltage can cause death or serious injury. Disconnect power before working on equipment.
	CAUTION Reliable functioning of the equipment is only ensured with certified components. Overvoltage category III (Refer IEC 60947-1)
NOTICE This product has been designed for environment A. Use of this product in environment B may cause unwanted electromagnetic disturbances in which case the user may require to take adequate mitigation measures.	

Technical Data

Designation	7UG0572-1GT21
Type	Automatic Power Factor Controller
Operating range	50 to 440 VAC (L-L) 30 to 250 VAC (L-N)
AC Network	3Φ 4W / 3Φ 3W / 2Φ 2W / 1Φ 2W
Display parameters	Power Factor
Control Supply	90 to 250 VAC, 50/60Hz
Power consumption	15VA
Frequency range	50/60Hz
Operating temperature	0°C to 60°C
Humidity	upto 95% ,without moisture condensation
Alarm mode (relay output)	Over voltage, Under voltage, Over Compensate, Under Compensate, CT Polarity error
Trip indication	Alarm relay turns ON and ALARM LED blinks
No. of relay outputs	12 (Additional 1 for Alarm)
Rated current of relay outputs (@250VAC)	5A* (AC12), 1A (AC15)
CT Burden	20 mohms
Switching program	Automatic / Linear / Rotational
Mounting	Panel mounting
SCPD for relay output (For Short circuit current of 1kA as per IEC 60947-5-1)	6A, gL, HRC fuse

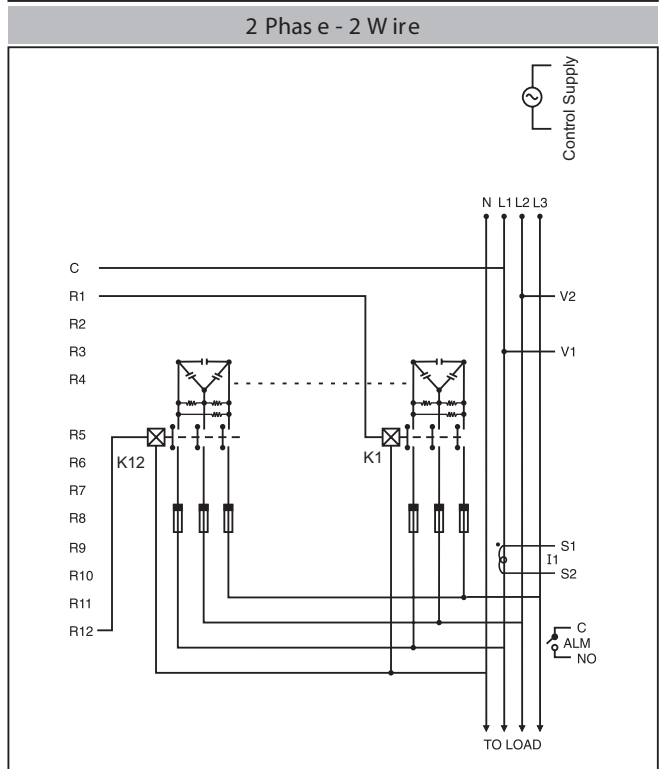
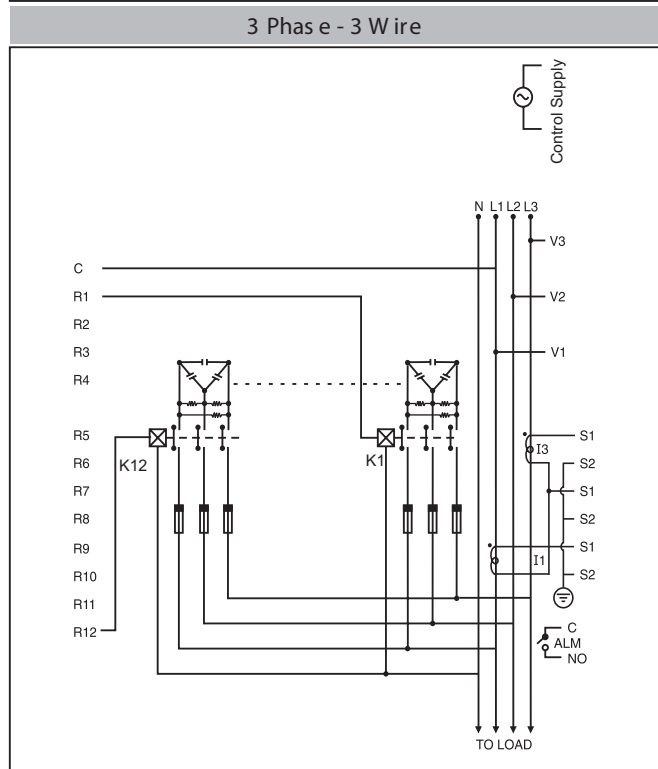
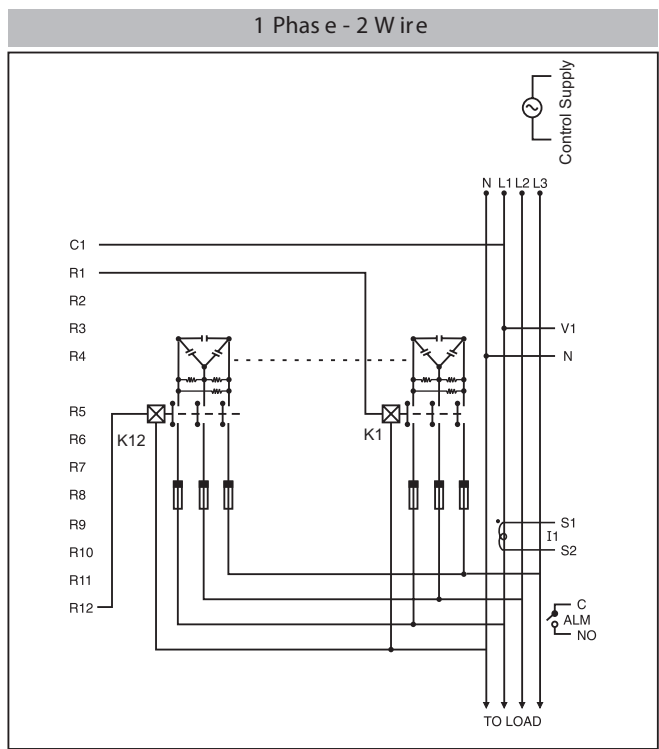
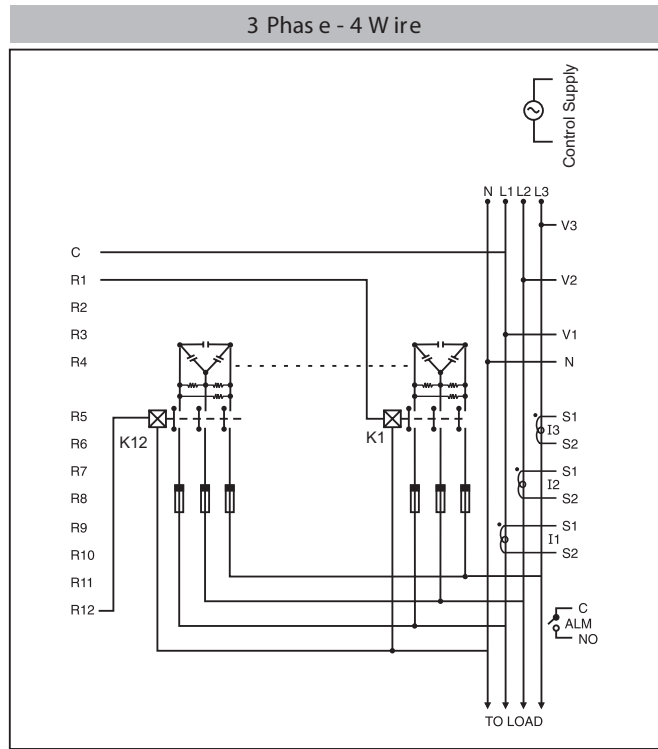
* 5A AC12 rating is for individual relay contact. If multiple relays are ON, relay AC12 rating will be limited to 1.2A @ 250V.

LED Indications	
LED	Description
1 to "X" [X = 12]	Capacitor Banks that are ON.
AUTO	Indicates controller is in AUTO mode.
AUTO	Indicates controller is in MANUAL mode.
ALARM	No fault condition present.
ALARM [Blinking]	Fault condition occurred [Press OK key to display trip parameter]
ALARM	This will take place when user will press OK key in fault condition. Trip parameters will be displayed for 3sec each.



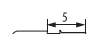
Note : On occurrence of any new fault condition ALARM LED starts blinking again & on pressing OK key all trip parameters will be displayed for 3sec each

Terminal connections

Wiring Diagram

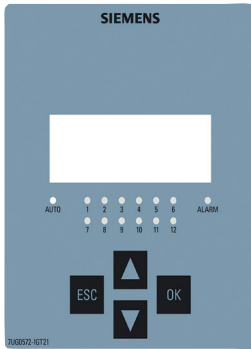


Note: • For N/W selection 2P2W voltage (V_{LN}) applied between V1 & V2 and connect CT for I1 [Do not use V3, N I2 & I3 terminal]
 • For N/W selection 1P2W voltage (V_{LN}) applied between V1 & N and connect CT for I1 [Do not use V2, V3, I2 & I3 terminal]

	7UG057..
	0.5 Nm
 Solid	1 x (0.75 to 2.5) mm ² 2 x 0.5 to 2 x 1.5 mm ²
 Stranded with end sleeve	1 x (0.5 to 2.5) mm ² 2 x (0.5 to 1.5) mm ²

Note: The distance between APFC and external Current transformer should be kept as short as possible. Use shielded cable or twisted pair cable between APFC and Current transformer for long distance (Greater than 1m).

Front Panel Description



Configuration

Key Description

Press ▼ & OK	For 3 sec to enter or exit from the configuration menu.
Press ▲	For increment
Press ▼	For decrement
Press OK	To save the setting and move on to next page
Press ESC	To go back
Press ESC & ▲	For 3 sec to enter in Test Mode

Note: Test mode checks all the relays present in product sequentially.

Serial Number Description

Press ESC (**ESC**) key for 10sec. to display 8 digit serial number.

Example : Sr. No. 12345678

Press ESC (ESC) key for 10sec.	Displays 1234 for 3 sec. After 3 sec. displays 5678 for 3 sec.
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Configuration Menu

Main Menu	Level	Sub Menu
Installation Passw ord (PW1)	LE-1	Change Pass word Yes / No New Password CT Primary CT Secondary Network Selection Phase Compensation Nominal Voltage Thresh old Voltage Auto Initialization Max Relay No. Mode Switching Program Target P.F Step Time Discharge Time Control Sensitivity Setting Low Current Setting
		CPYd NPYd CTP CTS NETY PCrA UOLT UEH R. INt rLY rODE SYPG tPF StPt d ISt CSNS LCUR
Technical Passw ord (PW2)	LE-1	Change Pass word Yes / No New Password CT Primary CT Secondary Network Selection Phase Compensation Nominal Voltage Thresh old Voltage Auto Initialization Max Relay No. Mode Switching Program Target P.F Step Time Discharge Time Control Sensitivity Setting Low Current Setting
	LE-2	No Voltage Over Voltage Over Voltage Setting Under Voltage Under Voltage Setting Over Compensation Under Compensation CT Polarity Error Hysteresis Voltage Hysteresis Power Factor Factory Default
	LE-3	Bank 1 Bank 2 Bank 3 Bank 4 Bank 5 Bank 6 Bank 7 Bank 8 Bank 9 Bank 10 Bank 11 Bank 12
		RULt OULt OUS UULt UUS OCrP UCrP CLEr RULt HPF dFLt rLO1 rLO2 rLO3 rLO4 rLO5 rLO6 rLO7 rLO8 rLO9 rL10 rL11 rL12
		NOTE: LE-3 will be prompted only when mode is set to manual in LE-1. • After entering into PW2, all levels can be accessed. • Press ESC Key to change the level. Different level can be selected by pressing increment & decrement Key.

PRESS **▼** + **OK** KEY S for 3 sec. to enter or exit from configuration menu.

Pass word
PSYd

Level 1				
Display	Description	Default Value	Range	Condition
PSWD	Password	10(PW1); 11(PW2)	0000 - 9999	
C.PWD	Change Password	No	No / Yes	
N.PWD	New Password	0	0000 to 9999	This option will be prompted only when C.PWD set to YES.
CT.P	CT Primary	5A	5 to 9999A	1 to 9999 (CT.S=1) 5 to 9999 (CT.S=5)
CT.S	CT Secondary	5A	1A / 5A	
NETW	Network Selection	3P4W	1P2W / 2P2W / 3P3W / 3P4W	
PCMA	Phase compensation	0°	0°, 90°, 120°, 210°, 240°, 330°	Only for 1P2W / 2P2W
VOLT	Nominal Voltage	240V (L-N) 415V (L-L)	50V-440V	
V.TH	Voltage Threshold	0%	0% to 100%	
A.INT	Auto Initialization	Yes	No / Yes	
RLY	Max Relay Numbers	12	1 to 12	
MODE	Mode	Auto	Auto / MANL	
SWPG	Switching Program	Auto	Automatic (AUTO)	
			Linear (LINR)	
			Rotational (ROTN)	
T.PF	Targeted P.F	1.000	-0.800 to 0.800	
STP.T	Step Time	5s	1s to 999s	
DIS.T	Discharge time (Reconnection time)	180s	1s to 999s	
C.SNS	C/K Setting	60%	55% to 100%	
L.CUR	Low Current Setting	0	0% to 50%	

Note:

- Auto-Initialization (A.INT) is working at best, under stable load conditions.
- Auto-Initialization (A.INT) works only with capacitor banks and not with reactors.
- If V.TH value is set to zero, A.IN will be done only at power ON.
- (A.INT) will be update 'NO' automatically in configure after Auto
- Reauto - Initialization will be done by only changing(A.INT) - YES in configure
- Recommended that number of relays not to be changed during normal operation. If done so, restart the unit.
- Recommended to restart the unit if Switching program(SWPG) is changed during normal operation for proper functionality in accordance with the chosen control mode.

Response time for relay is 3-5 sec.

Level 2				
Display	Description	Default Value	Range	Condition
N.VLT	No voltage	ON	ON / OFF	
O.VLT	Over voltage	ON	ON / OFF	
OV.S	Over voltage setting	260V (L-N) 460V (L-L)	50 - 277V (L-N) 85 - 480V (L-L)	This option will be prompted only when O.VLT option is ON.
U.VLT	Under voltage	OFF	ON / OFF	
UV.S	Under voltage setting	190V (L-N) 340V (L-L)	50 - 240V (L-N) 85 - 415V (L-L)	This option will be prompted only when U.VLT option made ON.
O.CMP	Over compensation	ON	ON / OFF	
U.CMP	Under compensation	ON	ON / OFF	
CT.ER	CT Polarity error	ON	ON / OFF	
H.VLT	Hysteresis voltage	2	1% to 10%	
H.PF	Hysteresis power factor	1	1% to 5%	
DFLT	Factory Default	No	No / Yes	

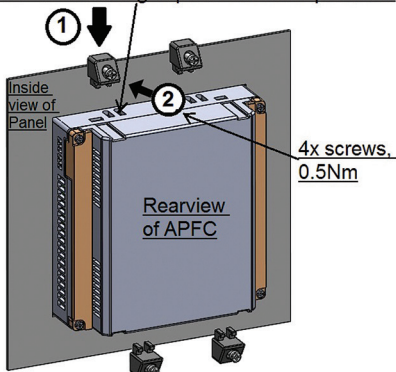
Level 3				
Display	Description	Default Value	Range	Condition
RL.01	Bank 1	OFF	ON / OFF	Prompted only if MODE is set to MANUAL
RL.02	Bank 2	OFF	ON / OFF	
RL.03	Bank 3	OFF	ON / OFF	
RL.04	Bank 4	OFF	ON / OFF	
RL.05	Bank 5	OFF	ON / OFF	
RL.06	Bank 6	OFF	ON / OFF	
RL.07	Bank 7	OFF	ON / OFF	
RL.08	Bank 8	OFF	ON / OFF	
RL.09	Bank 9	OFF	ON / OFF	
RL.10	Bank 10	OFF	ON / OFF	
RL.11	Bank 11	OFF	ON / OFF	
RL.12	Bank 12	OFF	ON / OFF	

Note:

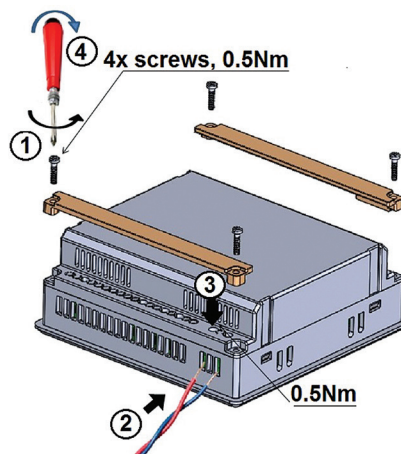
- When condition of Low Current occurs, the display of controller will show the 'CURR'
- Low current setting is applicable for no load condition only. (i.e. minimum load) & to be done at no load condition on site.
- No Voltage Alarm deactivation time is 90 sec.

Mounting APFC:

Guide 4x mounting clips in the slots provided



Cable and Cover termination:



User Guide

a) Manual switching (MANL)

When this switching program is selected, the capacitor steps are controlled manually by the user.

b) Rotational switching (ROTN)

This switching program is based on rotational first-in-first-out sequence. This option will automatically switch in and out the capacitors according to the targeted power factor, sensitivity setting and the re-connection time setting.

c) Automatic switching (AUTO)

This automatic switching program uses intelligent switching sequence. The step switching sequence is not fixed and the program automatically selects the most appropriate steps to switch in or out in order to achieve shortest reaction time with minimum number of steps.

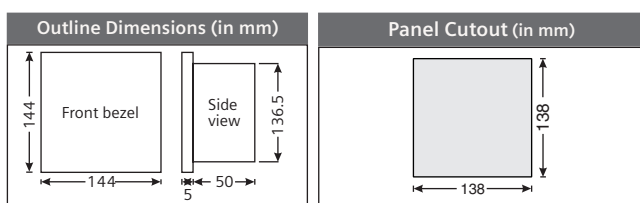
d) Linear switching (LINR)

In this switching sequence it works in last in first out mode. This option will automatically switch in and out the capacitors according to the targeted power factor, sensitivity setting and the re-connection time setting.

Phase-Angle Setting

Voltage	L1-N	L2-N	L3-N	L2-L3	L3-L1	L1-L2	L1-N	L2-N	L3-N	L2-L3	L3-L1	L1-L2	L1-N	L2-N	L3-N	L2-L3	L3-L1	L1-L2
CT	L1	L2	L3	L1	L2	L3	L3	L1	L2	L3	L1	L2	L2	L3	L1	L2	L3	L1
Phase-Angle	0°	0°	0°	90°	90°	90°	120°	120°	120°	210°	210°	210°	240°	240°	240°	330°	330°	330°

Dimensional Drawing (mm)



Disposal

Siemens products are environment friendly, which predominantly consist of recyclable materials.

For disposals we recommend disassembling and separation into following materials:

METALS: Segregate into Ferrous & Non Ferrous types for recycling through authorised dealer.

PLASTICS: Segregate as per material type for recycling through authorised dealer. Because of the long lifetime of Siemens products the disposal guidelines may be replaced by other national regulations when taking the product out of service.

The local customer care service is available at any time to answer disposal-related questions